

1800 Series Data Line Protector

BOURNS®

INSTALLATION INSTRUCTIONS

Bourns Part No.	Peak Signal Voltage	Series DC Resistance Per Line	Max. Short Circuit Current	Recommended Fuse rating
1810 / 1820-10	10 V	10 Ω	220 mA	200 mA
1810 / 1820-15	15 V	15 Ω	180 mA	150 mA
1811 / 1820-28	28 V	22 Ω	150 mA	125 mA
1812 / 1820-50	50 V	51 Ω	75 mA	75 mA

Bourns Part No.	Peak Signal Voltage	Series DC Resistance Per Line	Max. Short Circuit Current	Recommended Fuse rating
1810 / 1821-10	10 V	10 Ω	350 mA	300 mA
1810 / 1821-15	15 V	15 Ω	300 mA	300 mA
1811 / 1821-28	28 V	22 Ω	250 mA	250 mA

WARNING: If maximum continuous or short circuit current may exceed specified values, a current-limiting fuse must

be installed between the power supply or current source and the equipment side of the protector. See above table.

General

Bourns® Model 1800 Series Data Line Protectors provide bi-directional protection. Therefore, they can be used in both positive and negative supply systems.

Each 1800 Series unit protects one differential pair (see Fig. 1), or two individual data lines (see Fig. 2), or one current loop (see

Fig. 3). Cable shields can be passed through and may either be grounded or not grounded at the protector via the grounding link as shown in Fig. 4.

Place protector(s) as close as possible to the equipment to be protected.

Typical Connections

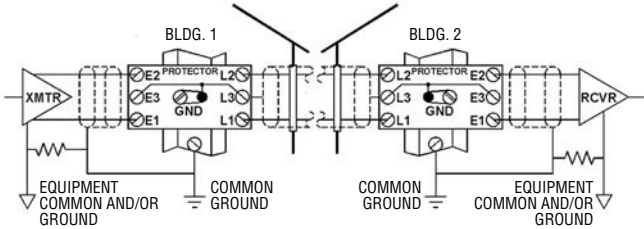


Figure 1
BALANCED OR DIFFERENTIAL INTERFACE
(i.e., RS-422)

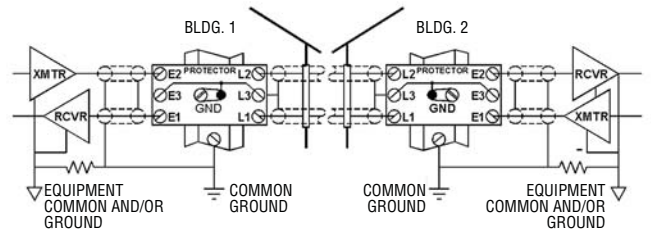


Figure 2
UNBALANCED INTERFACE - TWO INDIVIDUAL CIRCUITS
(i.e., RS-232)

IMPORTANT: Common Ground = Chassis, Power and Earth Ground. However, when earth grounding of electronic common is not permissible, protector(s), including rail, may have to be isolated from earth ground via a Bourns® Model 2027-15-B Spark Gap as shown in Fig. 4.

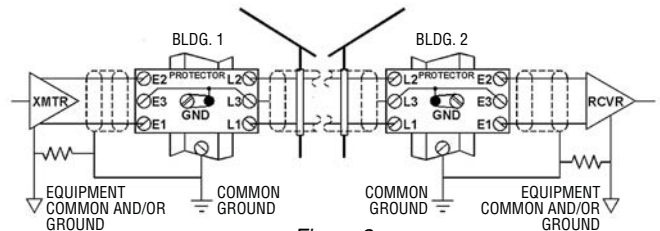


Figure 3
CURRENT LOOP, 4-20 mA

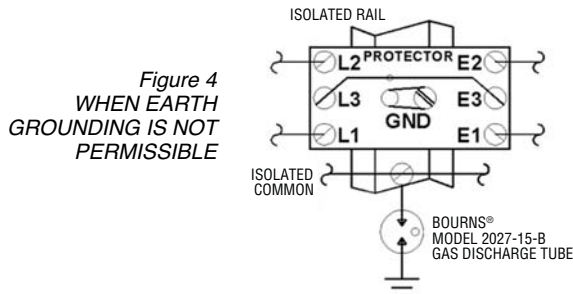


Figure 4
WHEN EARTH
GROUNDING IS NOT
PERMISSIBLE

Mounting Instructions

TS-35 RAIL MOUNTING (See Figure 5)

1. Using the clamp assembly, each protector can be installed or removed without disturbing other protectors.
2. Protector establishes ground connections with the rail via the clamp assembly. Tighten screw firmly.
3. Rail must be connected to common ground. A solid or stranded No. 6 AWG tin-plated copper wire is recommended. Length to be as short as possible and not to exceed 10 feet.

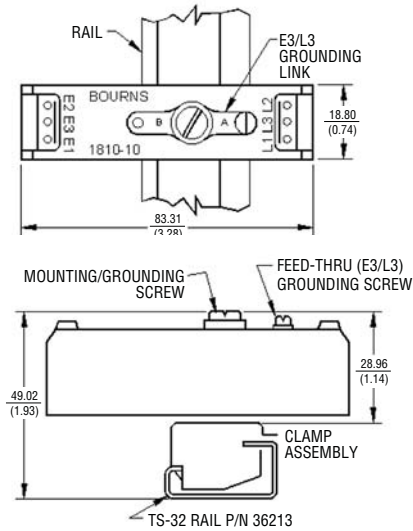


Figure 5
TS-32 RAIL MOUNTING

BUS BAR OR PLATE MOUNTING (See Figure 6)

1. Remove clamp assembly from protector.
2. Drill and tap bus bar or plate as shown.
3. Protector establishes ground connection with the bus bar or plate via the 8-32 mounting/grounding screw. Tighten firmly.
4. Bus bar or plate must be connected to common ground. A solid or stranded No. 6 AWG tin-plated copper wire is recommended. Length to be as short as possible and not to exceed 10 feet.

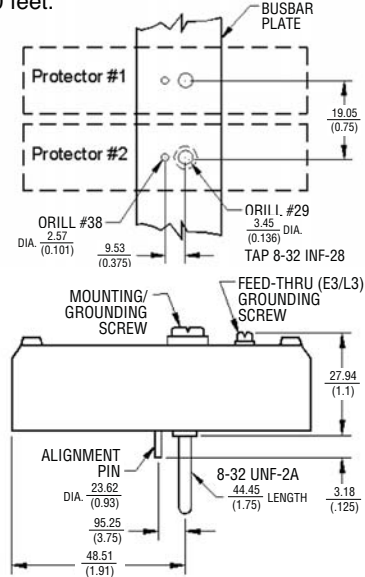


Figure 6
RECOMMENDED BUS BAR OR PLATE MOUNTING

Data Line Connections (See Figures 1-3)

WIRE PREPARATION

Minimum usable wire size is No. 24 AWG. Maximum usable wire size is No. 14 AWG. Strip insulation to 0.3 inches.

LINE TERMINALS L1, L2, L3

Connect the line (field) wires which are subject to high voltage surges to protector terminals L1 and/or L2. Connect the cable shield (if any) to protector terminal L3. L3 is internally connected to E3.

WARNING: Never connect field lines which are subject to high voltage surges to the protector equipment terminals E1 and/or E2. The protector may be damaged.

EQUIPMENT TERMINALS E1, E2, E3

Connect the equipment to be protected to protector terminals E1 and/or E2. Connect the cable shield (if any) to protector terminal E3 unless it is desirable to float the shield at this point (see Figures 1 and 2). E3 is internally connected to L3.

SHIELD GROUND OPTIONS (See Figure 4)

The shield is normally grounded at the protector with the E3/L3 grounding link in position A. If the shield is to be ungrounded, move the grounding link to position B. Re-tighten mounting and grounding screws firmly.

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